

Review of the genus *Polyura* Billberg (Lepidoptera: Nymphalidae) from China with description of a new species

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Abstract: Chinese species of the genus *Polyura* Billberg are revised. Ten species, including a new species, *Polyura eleganta* sp. nov. from Gansu Province, are described and illustrated. A key to the Chinese species is provided.

Key words: butterfly; nymphalids; taxonomy; key; distribution

中国尾蛱蝶属 *Polyura* Billberg 订正及一新种记述（鳞翅目：蛱蝶科）

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摘要: 记述中国尾蛱蝶属 10 种, 其中包括 1 新种: 雅尾蛱蝶 *Polyura eleganta* sp. nov., 编制了该属的中国种类分种检索表。

关键词: 蝴蝶; 蛱蝶; 分类; 检索表; 分布

Introduction

The genus *Polyura* was established by Billberg (1820) with *Papilio pyrrhus* Linnaeus as its type species.

The genera *Polyura* and *Charaxes* have often been considered congeneric (Smiles 1982; Aduse-Poku *et al.* 2009; Müller *et al.* 2010; Toussaint *et al.* 2015); taken together with *Palla* Hübner and *Euxanthe* Hübner, they form the prionopterous Old World section of the Charaxinae. Smiles (1982) reviewed this genus with discussion of the phylogeny of 26 species worldwide. He believed *Polyura* possesses sufficient specialization to justify its separation from *Charaxes* at the generic level, and it can therefore be shown that *Charaxes* in its present usage is paraphyletic (Smiles 1982). Smiles (1982) also regarded *Polyura* as monophyletic, having its sister group within *Charaxes*. Fang & Zhang (2007) subsequently described one new species in this genus.

The generic nomenclature of the butterflies now contained in the genus *Polyura* has been

confusing for many years. *Eulepis* was utilized by, among others, Rothschild & Jordan (1898) in the most definitive work on this genus to date. *Eriboea* Hübner (a synonym of *Charaxes*) has been used by several other authors, including Fruhstorfer (1914). *Eulepis* Scudder is a junior homonym of *Eulepis* Billberg, an unrequired replacement name for the riodinid genus *Nymphidium* Fabricius. When introducing *Eulepis*, Billberg included the name *athamas*, a manuscript name and therefore unavailable for citation as a type-species. Scudder mistakenly took this to be *Papilio athamas* Drury, and thus *Eulepis* to be a Charaxine genus.

Röber ([1925]: 169) realized Scudder's mistake and picked *Eriboea* as an alternative to *Eulepis* Scudder. He advanced the erroneous argument that *Papilio athamas* Drury was the type-species of *Eriboea*, whereas the true type-species is *Papilio etheocles* Cramer (selection of Scudder 1875: 166), a taxon currently referred to *Charaxes*.

Toussaint *et al.* (2015), using molecular species delimitation methods on empirical data to reconstruct phylogenetic relationships within the *Polyura*, described two new species, *Polyura paulettae* Toussaint sp. nov. and *Polyura smilesi* Toussaint sp. nov., proposed one synonym, and raised five populations to species status.

In this paper, we describe a new species of the genus *Polyura*. So far, 35 species in this genus have been reported worldwide with 10 species recorded from China. A key is provided to all of the 10 species from China.

Material and methods

External morphology was observed and pictures were taken using a Leica ZOOM2000 stereomicroscope and an OLYMPUS PM-10AD microscope. Male terminalia were dissected, treated with 10% NaOH solution at approximately 80° C for several minutes, and observed in a droplet of glycerine under the compound light microscope. The morphological terminology used in the descriptions mainly follows Chou (1999). All measurements are in millimeters (mm). Specimens examined are deposited in the Entomological Museum of Northwest A & F University, Yangling, Shaanxi, China (NWAUFU).

Taxonomy

Polyura Billberg, 1820

Polyura Billberg, 1820: 79. TS: *Papilio pyrrhus* Linnaeus, by subsequent designation (Scudder, 1875: 255).

Eulepis Scudder, 1875: 170. TS: *Papilio athamas* Drury, by original designation. [Junior homonym of *Eulepis* Billberg (1820: 80).]

Murwareda Moore, 1896: 263. TS: *Charaxes dolon* Westwood, by original designation.

Pareriboea Roepke, 1938: 346. TS: *Papilio athamas* Drury, by subsequent designation (Hemming, 1964: 126). [Invalid under Article 13b of the ICZN code, 1964.]

Description. Forewing with costa strongly arched, apex pointed and termen concave. Upperside. Wings black or dark brown, with broad yellowish green, yellow, green or white discal band on forewing and hind wing; with small spots on dark terminal border on hind wing, or pale yellow or greenish-yellow with a broad, black apex and termen on the forewing and marginal markings on the hindwing. Underside. Ground colour silvery white or taupe with

pale green or yellowish areas corresponding to the pale yellowish green or yellow or green or white areas of upperside. Outer marginal, submarginal, forewing costal margin and inside of discal band with some bands well-defined, with red brown.

Both sexes are very similar to each other and are tailed at vs. 2 and 4. Median cell of forewing shorter and closed; median cell of hind wing open.

Adults are large and robust, fast-flying butterflies. Easily attracted to faeces, carrion, fermenting fruit and exuding plant sap. Males are highly territorial and exhibit patrolling, fighting and hill-topping behaviour.

Male genitalia. Heavily strengthened, tegument roof folded down and narrowing on each side to form slender pedicles joining with narrow vinculum. Uncus short, densely chitinized, hairy, with or without bifurcated apices. Vinculum narrow. Gnathos large and developed, elbow-like. Saccus thick and longer. Valvae oblong, hook-shaped distally and curved inward. Aedeagus straight, slim and long, about twice length of valvae. Cornuti absent. Juxta well-developed, falcate in lateral view and anchor-like in dorsal view.

Female genitalia (Figs. 1, 2). Genital plate developed. Ductus bursae long, sclerotized. Bursa copulatrix ovum-shaped. Signa paired, well developed, bandform, saw-toothed.

Remarks. This genus is similar to the Afrotropical genus *Charaxes* Ochseneheimer, 1816; they were considered congeneric but differ in having two similar-shaped tail-like protrusions on the hindwing and a completely open median cell in the hindwing.

Distribution. China; Vietnam; Myanmar; Laos; Sikkim; Bhutan; Nepal; Bangladesh; India; Japan (Ryukyus); Thailand; Cambodia; Philippines; Malaysia; Sri Lanka; Singapore; Indonesia; New Guinea; Java; Sumatra; Borneo; Pacific islands and Australia.



Figures 1, 2. 1. Female genitalia of *Polyura narcaea*; 2. Female genitalia of *Polyura eudamippus*.

Key to the species of *Polyura* from China

1. Forewing upperside without submarginal spots, hindwing upperside with discal band well-defined, never extending to wing base..... 2
- . Forewing upperside with submarginal spots, hindwing upperside with discal band ill-defined proximally, often reaching to wing base..... 4
2. Forewing and hind wing upperside with white discal band, with structural blue associated with the discal band..... *P. schreiber* (Godart)
- . Forewing and hind wing upperside with green or yellowish green or pale blue discal band, with no structural

- blue associated with the discal band..... 3
3. Upperside with discal bands pale blue and relatively wide..... *P. arja* (Felder & Felder)
- . Upperside with discal bands pale green or yellowish green and relatively narrow.....
..... *P. athamas* (Drury)
4. Forewing underside forming a “Y” at end of discal cell..... 5
- . Forewing underside forming a “1” at end of discal cell..... 9
5. Forewing underside with more than two spots in discal cell..... *P. posidonius* (Leech)
- . Forewing underside with one or two spots in discal cell..... 6
6. Forewing upperside with submarginal and postdiscal spots present..... *P. eudamippus* (Doubleday)
- . Forewing upperside with only one row of spots..... 7
7. Hind wing underside with a chevron-shaped postdiscal spot in each cell..... *P. mutata* Fang & Zhang
- . Hind wing underside with postdiscal band simplified, having no chevron-shaped spots in anterior half..... 8
8. M₁ and M₂ rise from different points of the discal end vein, hindwing with submarginal band narrower.....
..... *P. narcaea* (Hewitson)
- . M₁ and M₂ rise from the same point of the discal end vein, hindwing with submarginal band wider.....
..... *P. eleganta* sp. nov.
9. Forewing upperside with submarginal and postdiscal spots present, underside without brown band running along costal margin..... *P. nepenthes* (Grose-Smith)
- . Forewing upperside with one row of spots only, underside with brown band running along costal margin.....
..... *P. dolon* (Westwood)

1. *Polyura athamas* (Drury, 1770) (Figs. 3–10)

Papilio athamas Drury, 1770: index, 5, pl. 2, fig. 4. TL: China.

Nymphalis athamas: Godart, 1824: 935.

Eulepis athamas: Rothschild & Jordan, 1898: pl. 10, figs. 1–5, 7–11, pl. 11, figs. 1–12, pl. 13, figs. 10, 11; Antram, 1924: 127, fig. 260.

Polyura athamas: Stichel, 1939: 552; Lewis, 1974: 271, pl. 150, fig. 1; Chou, 1999: 412.

Diagnosis. Upperside. Ground colour black, a pale green or yellow-green discal band runs down both wings commencing in the forewing on vein M₃ and tapering to a point at or around vein 2A in the hindwing. This band is narrower than in *P. arja*. Two similarly coloured spots are postdiscally in cell r₅ and m₁ of the forewing, but the spot in cell r₅ is rather smaller. Hindwing with tails blue-centred. A continuous row of white or pale yellow spots runs along the outer submargin. Underside. Ground colour pinkish brown. A pale green discal band, similar in shape to that of the upperside, is surrounded by a red-brown arcuate band, this band runs down both wings commencing in the forewing on vein M₃ and tapering to a point at or around vein 2A in the hindwing, which has a black line along its proximal edge. Forewing with a continuous row of V-shaped stripes running from cells r₅ to cu₂, surmounting a dark brown patch in cell cu₂. A black streak is present as a spot at the end of the discal cell, with one or two faint spots lying in the discal cell. Hindwing with a row of black streaks running along the outer submargin, and a row of postdiscal lunules runs along the outer edge of discal band, but continues to the anal angle.

Specimens examined. 1♂, China, Yunnan, Mengyang, 31-XII-1987, coll. Li LI & Zengzhao XUE; 1♂, Yunnan, Mengyang, 09-IX-2005, coll. Qing ZHAI; 22♂, Yunnan, Jinghong, 07–29-VIII-2006; 14♂, Yunnan, Jinghong, 31-VI-2007, coll. Yongping WEI & Xiaohong LAN; 1♂, Hainan, Baishaxian, 25-V-2007, coll. Qing ZHAI; 1♂, Yunnan, Mohan, 950 m, 03-IX-2005, coll. Qing ZHAI.

Distribution. China (Guangxi, Yunnan, Hainan, Sichuan, Hong Kong and Taiwan); India; Myanmar; Thailand; Vietnam; Laos; Malaysia; Philippines; Singapore; Sri Lanka; Bangladesh; Indonesia.



Figures 3–8. *Polyura athamas*. 3. Male genitalia, lateral view; 4. Aedeagus, lateral view; 5. Uncus and tegument, dorsal view; 6. Valva, inside view; 7. Juxta, lateral view; 8. Juxta, dorsal view.



Figures 9, 10. *Polyura athamas*. 9. Upperside; 10. Underside.

2. *Polyura arja* (Felder & Felder, 1867) (Figs. 11–18)

Charaxes arja Felder & Felder, 1867: 438, TL: Silhet; Schwanwitsch, 1926: 501, pl. 2, fig. 11.

Eulepis arja: Moore, 1896: 258, pl. 186, fig. 1, 1a, 1b, 1c; Rothschild & Jordan, 1899: 244.

Eulepis arja roeberi: Rothschild & Jordan, 1898: pl. 10, fig. 6.

Eriboea arja: Fruhstorfer, 1914: 720; Wynter-Blyth, 1957: 149, pl. 20, fig. 5.

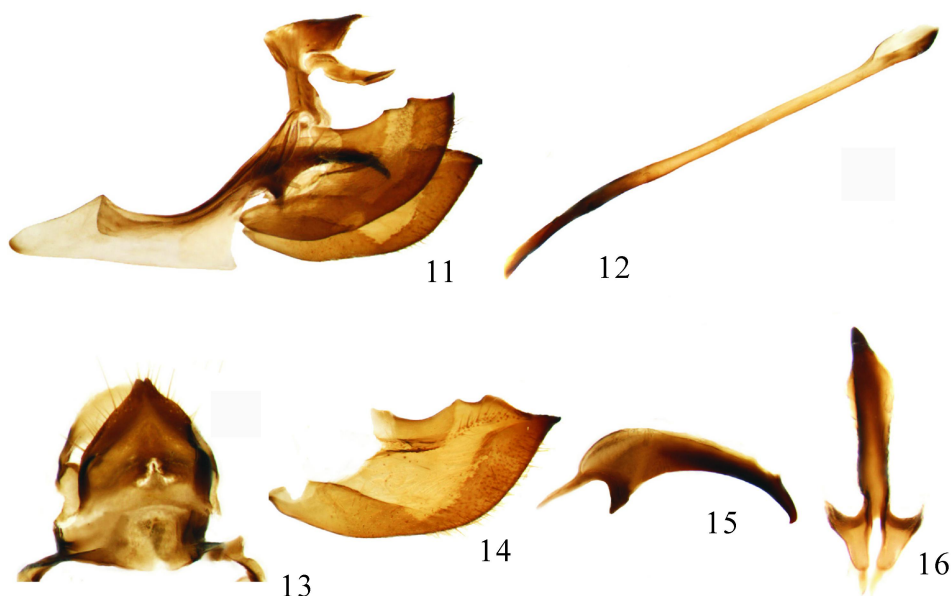
Polyura arja: Stichel, 1939: 564; Smiles, 1982: 176, figs. 21, 36, 117; Chou, 1999: 412.

Diagnosis. Similar in most respects to *P. athamas*, but differs from that species in the

following respects: the discal band is wider than in *P. athamas*. The colour of the discal bands and the subapical spots are white or pale green, and the discal edge of the discal band of the hindwing is strongly bordered with structural blue.

Specimens examined. 1♀, **China**, Yunnan, Xishuangbanna, VII-1991, coll. Shigen ZHOU; 2♂, Yunnan, Haikou, X-1956, coll. Zhengming PING; 2♂, Yunnan, Menglun, 600 m, 26–29-VII-2005, coll. Lijun FANG; 1♂, Yunnan, Menglun, 600 m, 09-IX-2005, coll. Jianxiong FENG; 4♂, Yunnan, Jinhong, 17–27-VIII-2006; 1♂, Hainan, Qionghai, V-1995, coll. Xiangsheng TAN.

Distribution. China (Fujian, Guangdong, Hainan, Guangxi, Yunnan and Sichuan); India; Thailand; Vietnam; Bangladesh.



Figures 11–16. *Polyura arja*. 11. Male genitalia, lateral view; 12. Aedeagus, lateral view; 13. Uncus and tegument, dorsal view; 14. Valva, inside view; 15. Juxta, lateral view; 16. Juxta, dorsal view.



Figures 17, 18. *Polyura arja*. 17. Upperside; 18. Underside.

3. *Polyura schreiber* (Godart, 1824) (Figs. 19–26)

Nymphalis schreiber Godart, 1824: 825, no. 11, 12. TL: Java.

Charaxes schreiberi: Distant, 1883: 104, pl. 13, fig. 2; Schwanwitsch, 1926: 501, pl. 2, fig. 9.

Eulepis schreiberi: Moore, 1896: 261, pl. 188, figs. 1, 1a, 2, 2a, 2b; Antram, 1924: 128, fig. 261.

Eulepis schreiber: Rothschild & Jordan, 1898: pl. 12, figs. 1, 2; 1899: 220.

Eriboea schreiber: Fruhstorfer, 1914: 724, pl. 135a; Wynter-Blyth, 1957: 147, pl. 2, fig. 4, pl. 20, fig. 4

Polyura schreiber: Stichel, 1939: 588; Smiles, 1982: 159, figs. 44, 45, 60, 61, 107–113; Chou, 1999: 413.



Figures 19–24. *Polyura schreiber*. 19. Male genitalia, lateral view; 20. Aedeagus, lateral view; 21. Uncus and tegument, dorsal view; 22. Valva, inside view; 23. Juxta, lateral view; 24. Juxta, dorsal view.



Figures 25, 26. *Polyura schreiber*, 25. Upperside; 26. Underside.

Diagnosis. Upperside. Ground colour black, brown thinly overlaid with structural blue scales towards bases. A white narrow discal band runs down both wings beginning in the forewing nearly in cell M_2 and narrowing to end in or near cell cu_2 in the hindwing, forewing

the half of the band nearest to the inner margin is often bordered by a substantial area of structural blue scales distally, and hindwing admarginals blue towards veins and this extends into the tails, often with orange in the cells. On forewing, an apical and two subapical white spots may be present. Hindwing submarginal white spots small. Underside. Ground colour pale magenta. The postdiscal spots have become strongly delineated chevrons, the discal band, similar in shape to that of the upperside, its inner region has a red-brown vertical band, this band runs down both wings commencing in the forewing on vein Sc and hindwing tapering to a point at or around vein 2A, hindwing admarginal streaks ochre yellow, the submarginal spots have become black streaks lying proximal to the admarginals, and these are bordered proximally by a thin pale white band.

Specimens examined. 1♂, **China**, Yunnan, Mengla, 14-V-1991, coll. Yong SHANG; 1♂, Yunnan, Jinghong, 23-VIII-2006, coll. Yong SHANG.

Distribution. China (Yunnan, Sichuan); India; Myanmar; Thailand; Vietnam; Malaysia; Philippines; Singapore; Indonesia.

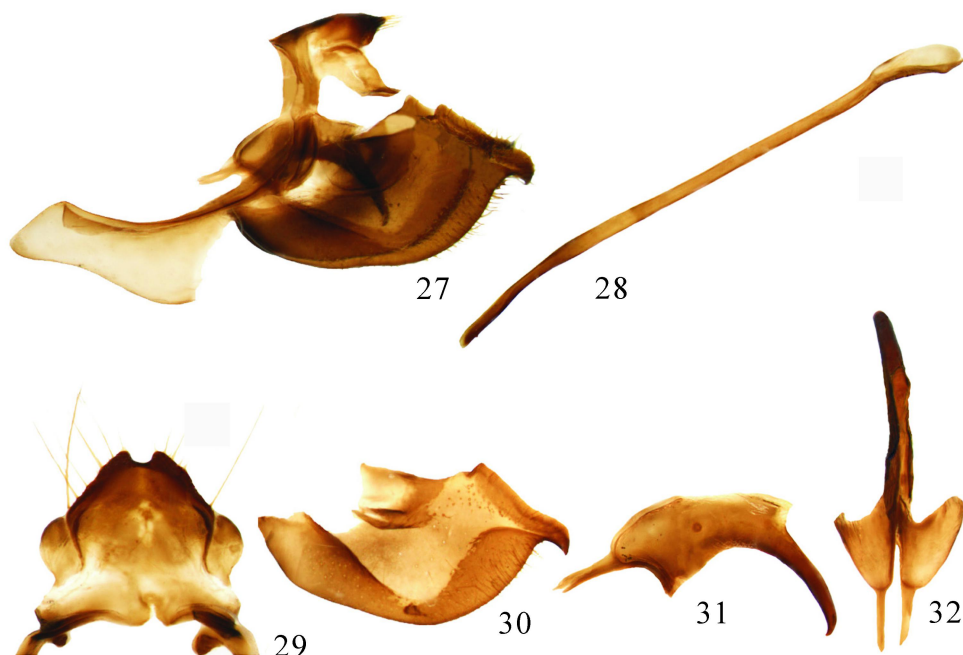
4. *Polyura narcaea* (Hewitson, 1854) (Figs. 27–34)

Nymphalis narcaeus Hewitson, 1854: 87, pl. 44, figs. 1, 4. TL: Chekiang.

Eulepis narcaeus: Rothschild & Jordan, 1899: 277, pl. 7, figs. 9–10.

Polyura narcaeus: Stichel, 1939: 573.

Polyura narcaea: Lewis, 1974: 288, pl. 197, fig. 10; Smiles, 1982: 194, figs. 50, 66, 132; Chou, 1999: 103.



Figures 27–32. *Polyura narcaea*. 27. Male genitalia, lateral view; 28. Aedeagus, lateral view; 29. Uncus and tegument, dorsal view; 30. Valva, inside view; 31. Juxta, lateral view; 32. Juxta, dorsal view.



Figures 33, 34. *Polyura narcaea*. 33. Upperside; 34. Underside.

Diagnosis. Upperside. Ground colour black. Both wings with a row of submarginal spots, often separate, but sometimes merging to form a band. Base half area of the forewing is pale yellowish green except for the most distinctive Y-shape at the end of the discal cell and black at the costal margin. Hindwing with outer margin black, admarginal streaks ochreous yellow. The remainder of the wing is pale yellowish green except for two black bands, the first from the costal margin close to the apex, to the tornus, the second band runs from the wing base to end at the tornus, the tails are blue-centred. Underside. Ground colour pale yellowish green. Forewing with three well-defined brown bands running along the outer, costal margin and an outer discal band, this system of bands nearest to the inner margin are often bordered by a silvery white band. Y-shaped brown bands are like those of the upperside; there is a black line along both edges. Hindwing with admarginals ochreous yellow and there is a continuous series of black spots in the nearest to the inner margin. Other bands the same as those of the upperside but brown and united to form a continuous band along the inner edge which is pinkish lilac and is bordered proximally by a black line.

Specimens examined. 1♂, **China**, Liaoning, Lushan, 650 m, 14-VII-2006, coll. Guoxi XUE; 1♂, Shandong, Laoshan, 26-V-2005, coll. Minggui JIA; 1♀, Shaanxi, Taibaishan, 17-VII-1982, coll. Hua YANG; 1♂, Shaanxi, Shangnan, 08-VIII-1973, coll. Tao TIAN & Tianying ZENG; 1♂, Shaanxi, Taibaishan, 14-IX-1981, coll. Jiyun WU; 1♂, Shaanxi, Louguantai, VIII-1987, 1♂, Shaanxi, Taibaishan, 14-V-1982, coll. Yonghui CAI; 1♂, Shaanxi, Fengxian, 20-VII-1988; 1♂, Shaanxi, Ningqiang, 19-V-1974, coll. Zhiqing WU; 1♂, Shaanxi, Nanwutai, VIII-1980; 2♂, Gansu, Wenxian, Bifenggou, 05-VI-2002, coll. Xiushan LI & Jun WANG; 2♂, Gansu, Wenxian, Bifenggou, 28-VIII-2002, coll. Xiushan LI & Jun WANG; 1♂, Sichuan, Lushan, 20-VI-1994, coll. Binghong WANG; 2♂, Sichuan, Lushan, V-2000, coll. Binghong WANG; 1♂, Sichuan, Shimian, 08-VII-1992, coll. Ming WANG; 2♂, Sichuan, Mt Emeishan, 13-VII-2005, coll. Zhao fu YANG & Cong WEI; 1♀, Chongqing, Jingyunshan, 09-IX-2005; 4♂, Guangxi, Longsheng, 01-VI-2001; 1♂, Guizhou, Fenjingshan, 850 m, 28-VII-2001, coll. Qiang SUN; 2♂, Jiangxi, Jian, 15-VIII-2002, coll. Zhonglin YUAN; 1♂, Fujian, Guangzhe, 25-VIII-2002, coll. Qingxia SUN; 1♂, Fujian, Nanjingxian, 18-VIII-2005, coll. Peiming WANG; 3♂, Guangxi, Huaping, 03-26-VIII-2006, coll. Lin LU & Hongwei GUO; 1♂, Hunan, Binzhou, 26-VII-1985, coll. Yalin ZHANG & Yonghui CAI; 2♂, Hunan, Hupingshan, 17–18-VII-2006, coll. Lin LU & Hongwei GUO; 1♂, Zhejiang Fengyangshan,

Fenjingshan, 03-VIII-2003; 1♀, Zhejiang, Wuyanlin, 03-VIII-2007, coll. Qiang FU & Hongwei GUO; 1♂, Taiwan, Yangmingshan, VII-1978.

Distribution. China (Liaoning, Hebei, Shandong, Henan, Shaanxi, Gansu, Hubei, Hunan, Jiangsu, Zhejiang, Jiangxi, Fujian, Guizhou, Sichuan, Guangdong, Guangxi, Yunnan and Taiwan); India; Myanmar; Thailand; Vietnam.

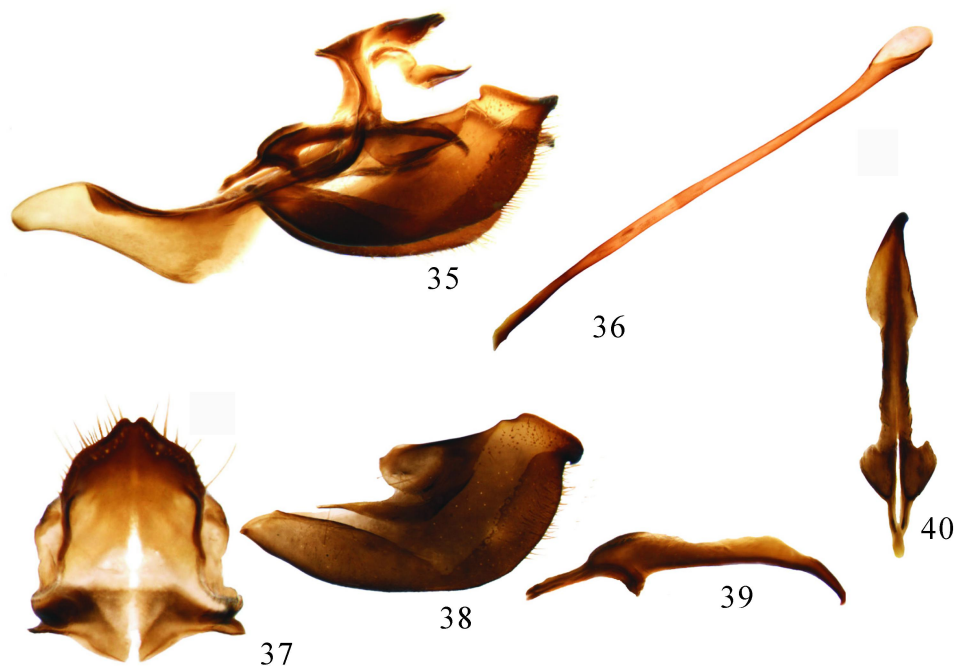
5. *Polyura eudamippus* (Doubleday, 1843) (Figs. 35–42)

Charaxes eudamippus Doubleday, 1843: 218, pl. 8. TL: Silhet.

Eulepis eudamippus: Rothschild & Jordan, 1898: pl. 8, figs. 1–6, pl. 13, figs. 15, 16.

Eriboea eudamippus: Fruhstorfer, 1914: 722, pl. 134d.

Polyura eudamippus: Stichel, 1939: 577; Lewis, 1974: 271, pl. 150, fig. 3; Smiles, 1982: 199, figs. 6, 46–48, 62–64, 154–159; Chou, 1999: 413.



Figures 35–40. *Polyura eudamippus*. 35. Male genitalia, lateral view; 36. Aedeagus, lateral view; 37. Uncus and tegument, dorsal view; 38. Valva, inside view; 39. Juxta, lateral view; 40. Juxta, dorsal view.

Diagnosis. Upperside. Ground colour black. Forewing with two rows of submarginal pale spots present. A postdiscal larger pale spot lies at the end of the discal cell in cell M_2 , and beyond this, in cells M_1 and R_5 lay two similar, but smaller spots. The discal band runs from vein M_3 to the inner margin. Hindwing outer margin dentate, black, tails long and blue-centred. Admarginals yellow, blue, or mixed. Two rows of submarginal spots pale and blue, triangular and V-shaped. Disco-basal broad patch is pale yellow. Underside. Ground colour silvery white. Forewing with a well-defined brown-yellow outer margin band and the outer discal band and a Y-shaped brown bands lying at the end of, and outlining part of the discal cell, as in *P. narcaea*, there are two black spots in the discal cell. Hindwing with admarginals ochreous yellow, submarginal spots black, white proximally. A yellow band runs from the costal margin

near the wing base and curves to end near the tornus. Discal edges are bordered by a row of black streaks. On both wings the remaining pale patches and spots correspond to the pale yellow tones of the upperside.

Specimens examined. 2♀, **China**, Gansu, Wenxian, Bifenggou, 21-VI-002, coll. Xiushan LI & Jun WANG; 1♂, Gansu, Wenxian, 30-III-2002, Xiushan LI & Jun WANG; 1♂, Gansu, Wenxian, 13-V-2002, Xiushan LI & Jun WANG; 4♂, Yunnan, Mengla, 600 m, 28-VII-2005, coll. Lijun FANG; 1♂, Yunnan, Mengla, 19-IV-1994, coll. Ming WANG & Xiaoling FAN; 1♀, Yunnan, Xishuangbanna, 20-IV-1982, coll. Sumei WANG & Jingruo ZHOU, 1♂, Guangdong, VIII-1995, coll. Xingfang WU; 1♂, Hunan, Shaoshan, 28-VII-2002, coll. Qingxia SUN; 1♂, Fujian, Shanghang, 14-VIII-2003; 1♂, Sichuan, Mt. Qingchengshan, 1120 m, 09-V-2005; 1♂, Guizhou, Tongzhi, 10-IX-2005; 4♂, Guangxi, Longsheng, 01-VI-2006.

Distribution. China (Hubei, Hunan, Zhejiang, Jiangxi, Fujian, Guizhou, Sichuan, Guangdong, Guangxi, Hainan, Yunnan, Gansu and Taiwan); Japan; India; Myanmar; Thailand; Vietnam; Laos; Malaysia.



Figures 41, 42. *Polyura eudamippus*. 41. Upperside; 42. Underside.

6. *Polyura dolon* (Westwood, 1848) (Figs. 43–50)

Charaxes dolon Westwood, 1848: 55, pl. 27, figs. 2, 3.

Nymphalis dolon: Westwood, 1850: 309.

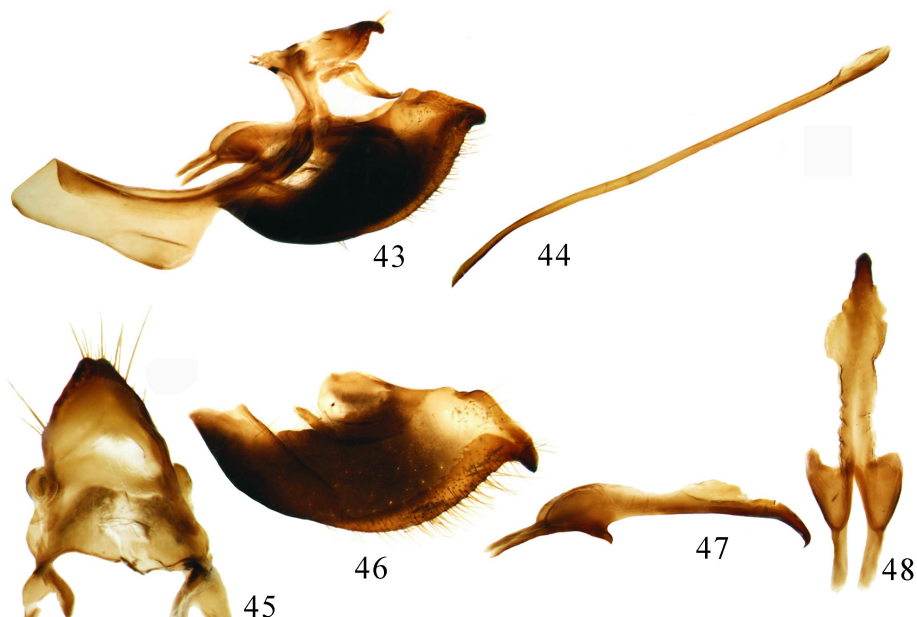
Eulepis dolon: Rothschild & Jordan, 1898: pl. 9, figs. 1, 2; 1899: 271; Antram, 1924: 129, fig. 263.

Polyura dolon: Stichel, 1939: 582; Lewis, 1974: 288, pl. 197, fig. 9; Duckworth *et al.*, 1975: 267, fig. 236h; Boonsong *et al.*, 1977: 140, pl. 68, fig. 340; Smiles, 1982: 208, figs. 52, 56, 144–148; Chou, 1999: 416.

Diagnosis. Similar in most respects to *P. eudamippus*, but differs in the following: disco-basal patches of both wings pale greenish yellow. Forewing with a row of submarginal pale green spots, and another row reduced or almost disappearing, and less than three postdiscal pale spots at cell M_1 , M_2 and R_5 than are in *P. eudamippus*. Costal edge brown, a black bar running from this across to the end of the discal cell.

Specimens examined. 1♂, **China**, Xizang, Motuo, 1050 m, 09-V-1980, Gengtao JIN; 7♂, Zhejiang, VII-1986; 1♀, Sichuan, Emeishan, 1938; 1♂, Sichuan, Yaan, VII-1990, Longsheng GUO; 2♂, Sichuan, Lushan, V-2000, coll. Binghong WANG; 7♂, Sichuan, Lushan, VI-2005, Lijun FANG.

Distribution. China (Zhejiang, Sichuan, Yunnan, Xizang); India; Myanmar; Thailand; Vietnam; Laos; Bangladesh; Nepal; Bhutan.



Figures 43–48. *Polyura dolon*. 43. Male genitalia, lateral view; 44. Aedeagus, lateral view; 45. Uncus and tegument, dorsal view; 46. Valva, inside view; 47. Juxta, lateral view; 48. Juxta, dorsal view.



Figures 49, 50. *Polyura dolon*. 49. Upperside; 50. Underside.

7. *Polyura nepenthes* (Grose-Smith, 1883) (Figs. 51–58)

Charaxes nepenthes Grose-Smith, 1883: 58. TL: Siam.

Eriboea nepenthes: Fruhstorfer, 1914: 273.

Eulepis nepenthes: Rothschild & Jordan, 1898: pl. 9, f. 3.

Polyura nepenthes: Stichel, 1939: 582; Boonsong *et al.*, 1977: 138, fig. 339; Smiles, 1982: 207, figs. 51, 67, 142–143; Chou, 1999: 417.

Polyura choui Gu & Chen, 1997: 166, fig. 1.

Diagnosis. Similar in most respects to *P. eudamippus*, but differs in the following respects. Ground colour brown of the upperside. Forewing less than a postdiscal pale spots at cell m_2 . A black bar running across the end of the discal cell. Hindwing with two rows of black submarginal spots present, one row with ocelli encompassing large pale pupils, another row V-shaped. Admarginal and submarginal areas are pale yellow or yellow, not black.



Figures 51–56. *Polyura nepenthes*. 51. Male genitalia, lateral view; 52. Aedeagus, lateral view; 53. Uncus and tegument, dorsal view; 54. Valva, inside view; 55. Juxta, lateral view; 56. Juxta, dorsal view.

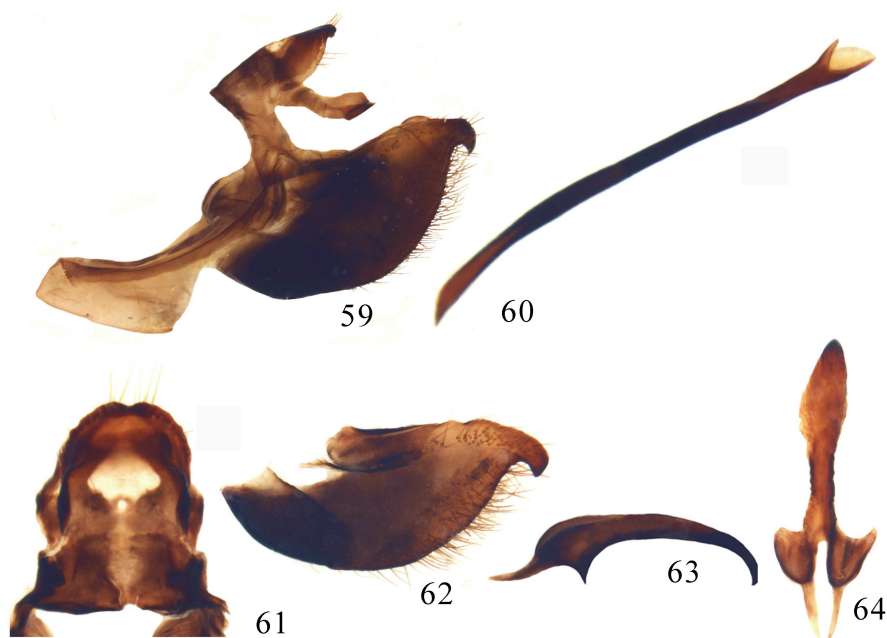


Figures 57, 58. *Polyura nepenthes*. 57. Upperside; 58. Underside.

Specimens examined. 1♂, **China**, Jiangxi, Chongren, 23-VII-1971; 1♂, Jiangxi, Chongyi, 23-VII-1979; 2♂2♀, Jiangxi, Guangfeng, 350–400 m, 08-VIII-1980; 1♂, Guangxi, Jinxiu, 21-IV-1982, Zhuyao LIU; 1♂, Guangxi, Shouming, 25-V-1984, coll. Shu GUAN & Xiaoling LU; 1♀, Yunnan, Lunan, 14-VII-1974, coll. Yao ZHOU & Feng YUAN; 1♂, Guangdong, 04-VII-1949, Yanxu; 1♂, Guangdong, 16-VII-1999, Daqing DENG.

Distribution. China (Sichuan, Guangxi, Guangdong, Hainan, Fujian, Jiangxi, Zhejiang, Yunnan, Gansu); Myanmar; Thailand; Vietnam; Laos.

8. *Polyura posidonius* (Leech, 1891) (Figs. 59–66)



Figures 59–64. *Polyura posidonius*. 59. Male genitalia, lateral view; 60. Aedeagus, lateral view; 61. Uncus and tegument, dorsal view; 62. Valva, inside view; 63. Juxta, lateral view; 64. Juxta, dorsal view.



Figures 65, 66. *Polyura posidonius*. 65. Upperside; 66. Underside.

Charaxes posidonius Leech, 1891: 30. TL: Wa-ssu-Kow and Ni-tou, Northwest China.

Charaxes clitiophon Oberthür, 1891: 12, pl. 2, fig. 11.

Murwareda posidonius: Moore, 1896: 267.

Eulepis posidonius: Rothschild & Jordan, 1899: 275, pl. 7, fig. 8.

Polyura posidonius Stichel, 1939: 577; Lewis, 1974: 288, pl. 197, fig. 11; Smiles, 1982: 193, figs. 42, 58;

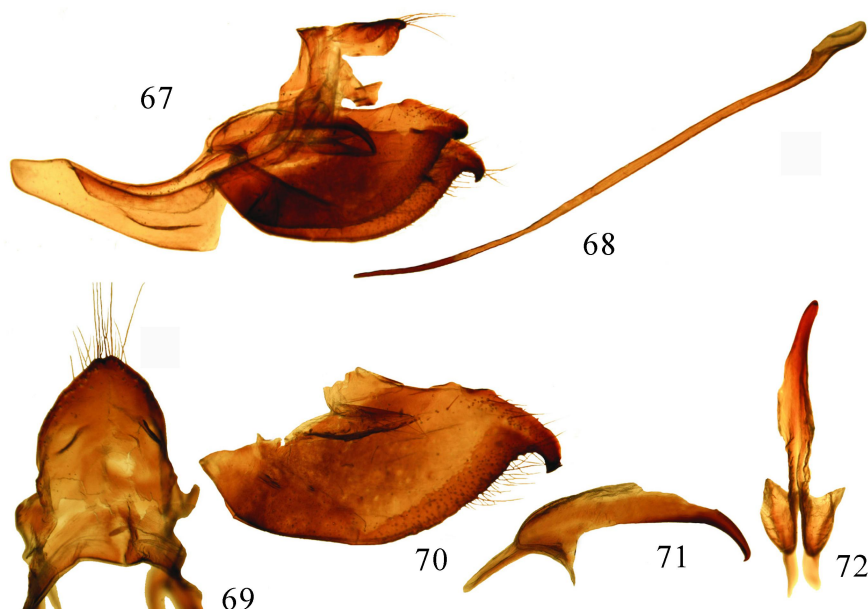
Chou, 1999: 418.

Diagnosis. Upperside. Ground colour black. A submarginal series of pale yellow spots is present. The discal band is pale yellowish green, there are two postdiscal patches in cells m_1 and r_5 , and a spot in cell m_2 which lies just beyond the end of the discal cell. Hindwing shape rather square with margins smooth. Outer margin black, admarginal streaks large and yellow, two tails long and centres blue. Disco-basal patch pale yellowish green, containing a brown band running from the hindwing base to end diffusely in cell cu_{1b} . Underside. Ground colour magenta silvery. Forewing outer marginal band and outer discal band brown, well-defined, the pale green discal band on its proximal and anterior side is surrounded by a yellowish brown arcuate band, the arcuate band is projected upwards along the end of the discal cell, forming a Y-shape, they are concentrated to form a scattering of small black spots in the discal cell. Hindwing with outer margin and outer discal band brown, the admarginal streaks are pale yellow, orange distally. The postdiscal lunules are pale blue, overlay on outer discal band, and border onto a black line which also delineates the pale green discal patch. Above is a red-brown costal band found only in this species. The pale green anal pouch with minute black spots also only occurs in this species.

Specimens examined. 3♂, **China**, Sichuan, Kangding, 2000 m, 16-V-2008, coll. Ping WANG.

Distribution. China (Tibet, Sichuan).

9. *Polyura mutata* Fang & Zhang, 2007 (Figs. 67–74)



Figures 67–72. *Polyura mutata*. 67. Male genitalia, lateral view; 68. Aedeagus, lateral view; 69. Uncus and tegument, dorsal view; 70. Valva, inside view; 71. Juxta, lateral view; 72. Juxta, dorsal view.

Polyura mutata Fang & Zhang, 2007: 468–472. TL: China (Sichuan).

Diagnosis. Similar in most respects to *P. dolon*, but distinguishable by a Y-shaped patch at

the end of the discal cell of the forewing.

Specimens examined. 1♂, **China**, Sichuan, Chengdu, 12-V-1995; 2♂, Sichuan, Lushan, V-2000, coll. Binghong WANG.

Distribution. China (Sichuan).



Figures 73, 74. *Polyura mutata*. 73. Upperside; 74. Underside.

10. *Polyura eleganta* sp. nov. (Figs. 75–83)

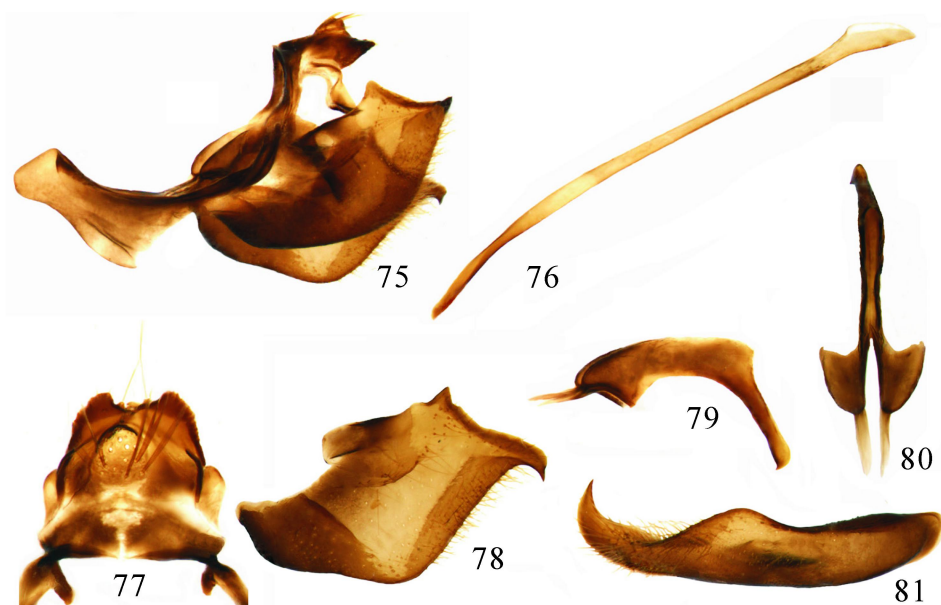
Upperside. Male. Forewing 39 mm ($n = 1$) long. Ground colour black or dark brown. Apex of forewing obviously pointed, outer margin smooth and straight, area between outer margin and submargin brown. Series of pale green submarginal spots enlarged and connected with outer margin, often separated by vein. Brown band runs from costal margin near wing base and close to apex. Discal band pale green, brown spot in cell m_2 lies just beyond end of discal cell. Most distinctive feature is Y-shaped at the end of the discal cell of the forewing. Discal cell pale green, forming part of disco-basal patch. M_1 and M_2 rise from the same point on discal end vein. Hindwing nearly square with outer margin dentate, outer margin brown, series of brown, oval spots on inner edge. Submarginal band wider, a vestige of the admarginals showing yellowish orange, centres of tails and lines beyond disco-basal patch in cell Cu_{1b} blue. Remainder of wing pale green except two brown bands, first well-defined and running from apex to tornus; second band runs from wing base down cell Cu_{1b} parallel with the vein to end at tornus, much more faintly marked. Tornus spots saffron yellow, with two eye-like spots.

Underside. Ground colour silvery white. With pale green areas corresponding to the pale yellowish green areas of upperside. Forewing outer marginal band, costal margin and submargin well-defined, with red brown, submargin running from costal band, past end of “Y” and ending on inner margin close to the tornus, Y-shaped system of red brown bands corresponding to those of upperside. Hind wing band and spots also corresponding to those of upperside, but middle oblique band much more marked and each brown band bordered proximally by black line.

Male genitalia. Tegument developed, with dorsal hump and setaceous at top. Uncus short, end broad, terminal binaural-like, two tubercles with long seta at apex. Vinculum narrow. Gnathos well-developed, elbow-like. Saccus boot-like, shorter than valvae. Valvae oblong,

wide, hook-shaped distally, curved inward with apex curved downwards, the upper anterior triangular, distinct gibbosity in the central area of valvae hemline. Aedeagus slim and long, about twice length of valvae, phallobase spoon-like. Juxta stout, falcate in lateral view, anchor-like in dorsal view; with forked structure on base, forming V-shaped groove in the dorsal central section, tapered apically.

Female genitalia. Unknown.



Figures 75–81. *Polyura eleganta*. 75. Male genitalia, lateral view; 76. Aedeagus, lateral view; 77. Uncus and tegument, dorsal view; 78. Valva, inside view; 79. Juxta, lateral view; 80. Juxta, dorsal view; 81. Valva, lateral view.



Figures 82, 83. *Polyura eleganta*. 82. Upperside; 83. Underside.

Holotype. ♂, **China**, Gansu Prov., Wenxian, Bigou Mountain, Wangmiao, 05-VI-2002, coll. Xiushan LI & Jun WANG.

Diagnosis. This species is similar to *Polyura narcaea*, but can be distinguished from the latter by the following characters: 1) M_1 and M_2 derived from the same point of the discal end

vein, 2) forewing apex obviously pointed, outer margin smooth and straight, 3) hind wing with submarginal band wider, 4) tegument with dorsal hump and setaceous at top, 5) uncus short, end broad, terminal binaural-like, two tubercles with long seta at apex, and 6) valvae wide, distinctly gibbous in the central area of valvae hemline.

Etymology. This species is named for its elegant habitus.

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